

## APPENDIX 1



### Illustrations and Examples

***"I am Merlin. I'm at your service." --- From a tale still told  
in Brittany***

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TOEBO“T44650

Parameter	Value	Unit
Temperature (°C)	25.0	
Pressure (kPa)	101.3	
Humidity (%)	65.0	
Wind Speed (m/s)	0.5	
Light Intensity (lux)	1000.0	
CO <sub>2</sub> Concentration (ppm)	400.0	
Relative Humidity (%)	65.0	
Soil Moisture (%)	60.0	
Plant Growth Rate (g/day)	0.5	
Water Uptake (L/day)	0.5	
Photosynthesis Rate (g/h)	0.5	
Respiration Rate (g/h)	0.5	
Stomatal Conductance (mol/m <sup>2</sup> /s)	0.5	
Chlorophyll Content (mg/g)	0.5	
Protein Content (mg/g)	0.5	
Carbohydrate Content (mg/g)	0.5	
Antioxidant Activity (U/g)	0.5	
Gene Expression (fold change)	0.5	
Enzyme Activity (U/g)	0.5	
Cell Wall Thickness (μm)	0.5	
Membrane Integrity (%)	0.5	
Signal Transduction (fold change)	0.5	
Metabolic Rate (g/h)	0.5	
Energy Consumption (J/h)	0.5	
Cellular pH	7.0	
Ion Concentration (mM)	0.5	
Protein Synthesis (g/h)	0.5	
Gene Expression (fold change)	0.5	
Enzyme Activity (U/g)	0.5	
Cell Wall Thickness (μm)	0.5	
Membrane Integrity (%)	0.5	
Signal Transduction (fold change)	0.5	
Metabolic Rate (g/h)	0.5	
Energy Consumption (J/h)	0.5	
Cellular pH	7.0	
Ion Concentration (mM)	0.5	
Protein Synthesis (g/h)	0.5	
Gene Expression (fold change)	0.5	
Enzyme Activity (U/g)	0.5	
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Cellular pH	7.0	
Ion Concentration (mM)	0.5	
Protein Synthesis (g/h)	0.5	
Gene Expression (fold change)	0.5	
Enzyme Activity (U/g)	0.5	
Cell Wall Thickness (μm)	0.5	
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Energy Consumption (J/h)	0.5	
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Protein Synthesis (g/h)	0.5	
Gene Expression (fold change)	0.5	
Enzyme Activity (U/g)	0.5	
Cell Wall Thickness (μm)	0.5	
Membrane Integrity (%)	0.5	
Signal Transduction (fold change)	0.5	
Metabolic Rate (g/h)	0.5	
Energy Consumption (J/h)	0.5	
Cellular pH	7.0	
Ion Concentration (mM)	0.5	
Protein Synthesis (g/h)	0.5	
Gene Expression (fold change)	0.5	
Enzyme Activity (U/g)	0.5	
Cell Wall Thickness (μm)	0.5	
Membrane Integrity (%)	0.5	
Signal Transduction (fold change)	0.5	
Metabolic Rate (g/h)	0.5	
Energy Consumption (J/h)	0.5	
Cellular pH	7.0	
Ion Concentration (mM)	0.5	
Protein Synthesis (g/h)	0.5	
Gene Expression (fold change)	0.5	
Enzyme Activity (U/g)	0.5	
Cell Wall Thickness (μm)	0.5	
Membrane Integrity (%)	0.5	
Signal Transduction (fold change)	0.5	
Metabolic Rate (g/h)	0.5	
Energy Consumption (J/h)	0.5	
Cellular pH	7.0	
Ion Concentration (mM)	0.5	
Protein Synthesis (g/h)	0.5	
Gene Expression (fold change)	0.5	
Enzyme Activity (U/g)	0.5	
Cell Wall Thickness (μm)	0.5	
Membrane Integrity (%)	0.5	
Signal Transduction (fold change)	0.5	
Metabolic Rate (g/h)	0.5	
Energy Consumption (J/h)	0.5	
Cellular pH	7.0	
Ion Concentration (mM)	0.5	
Protein Synthesis (g/h)	0.5	
Gene Expression (fold change)	0.5	
Enzyme Activity (U/g)	0.5	
Cell Wall Thickness (μm)	0.5	
Membrane Integrity (%)	0.5	
Signal Transduction (fold change)	0.5	
Metabolic Rate (g/h)	0.5	
Energy Consumption (J/h)	0.5	
Cellular pH	7.0	
Ion Concentration (mM)	0.5	
Protein Synthesis (g/h)	0.5	
Gene Expression (fold change)	0.5	
Enzyme Activity (U/g)	0.5	
Cell Wall Thickness (μm)	0.5	
Membrane Integrity (%)	0.5	
Signal Transduction (fold change)	0.5	
Metabolic Rate (g/h)	0.5	
Energy Consumption (J/h)	0.5	
Cellular pH	7.0	
Ion Concentration (mM)	0.5	
Protein Synthesis (g/h)	0.5	
Gene Expression (fold change)	0.5	
Enzyme Activity (U/g)	0.5	
Cell Wall Thickness (μm)	0.5	
Membrane Integrity (%)	0.5	
Signal Transduction (fold change)	0.5	
Metabolic Rate (g/h)	0.5	
Energy Consumption (J/h)	0.5	

The following represents the SME's current prototype of these applications.

### ***Illustration 1 – Merlin Dynamically Generated Clinical Information Application***

This application was built for a large outpatient clinic that required access via the web. It has two types of users, (physicians and administrative assistants) and each were required to receive their unique menu and tree choices to limit the functionality they could invoke.

This first graphic represents a physician user who is entering or reviewing clinical data about a patient. Merlin dynamically built each segment of the GUI below from the RAK tables populated by the clinical SME.

The menu is at the top, followed by label and identifying data. The window on the left is a Menu Tree with nodes that allow the user either, add or display clinical history data. The window on the right is currently exposing the form to add a new allergy for this patient. Patient ID, Short ID, Allergy Type and Specific Allergy are marked with an \* meaning they are required and the data cannot be saved until entries are made.

Description (*)Required	Input Data
1 * Patient ID	
2 * Short ID	
3 * Allergy Type	NA
4 * Specific Allergy	
5 Allergic Reaction	
6 Allergy Remarks	

When a user clicks on Patient\_ID, the SME has determined that the patient should be chosen from a data tree and has constructed the Tree\_Control RAK to handle the situation. It will be exposed in the left window as follows by a Merlin Data Tree control object. A selection can be made by keyboard, double click or drag and drop anywhere in the right window.

Current Open Form: New Allergy Data	
Description (*)Required	Input Data
1 * Patient ID	
2 * Short ID	
3 * Allergy Type	NA
4 * Specific Allergy	
5 Allergic Reaction	
6 Allergy Remarks	

Today's Patients  
 20/017983456  
 20/234589876  
 20/345672345  
 20/345987544  
 20/543653409  
 20/665493764  
 20/987657635  
 30/298563300  
 30/333958664  
 30/432762739  
 30/876964021

When a user clicks on Allergy Type, the SME has determined that the type of allergy should be chosen from a keypad and has populated the KeyPad\_Control RAK to accommodate this situation. The keypad will be exposed in the window on the right as follows using a Merlin keypad control object. A selection can be made by keyboard or double click.

Current Open Form: New Allergy Data	
Description (*)Required	Input Data
1 * Patient ID	20/017983456
2 * Short ID	
3 * Allergy Type	NA
4 * Specific Allergy	
5 Allergic Reaction	
6 Allergy Remarks	

Summary of Care DD2766  
 Display Summary  
 Add orders History  
 Consults  
 Labs  
 Meds  
 Rads  
 Display Orders History  
 Consults  
 Labs  
 Meds  
 Rads  
 Add Clinical History  
 Medical Alerts  
 Chronic Illnesses  
 Allergies  
 Counseling

Select "Allergy Type"  

Food	Medication	Other
------	------------	-------

The menu at the top is also built by the SME and contains those menu actions he or she has determined should be contained within the application and invoked from a dynamically generated menu.

## Illustration 2 – Merlin Dynamically Generated Driver's Log and Inspection Application

This application was built for a trucking firm to insure they exceeded DOT standards for data acquisition and reporting. Its data entry users were to be truck drivers located randomly around the US so they required an easy to use system for people who were not computer or keyboard proficient. The results will be a wireless system on PDA's, but more importantly, a system requiring as little typing as possible.

This first graphic represents a driver's daily log of activity in which the only fields requiring input are,

- The activity (chosen from a specific list shown on the data tree to the left),
- And the times the activity started and stopped (shown on the second graphic).

Merlin dynamically built each segment of the GUI below using internal controls called for by the data in the RAK tables populated by the trucking SME.

Description (*)Required	Input Data
1 * Driver ID	12345
2 * Driver's Name	Bowler F. L.
3 Date	01AUG2001
4 Driver's Activity To Log	
5 Activity Start Time	08:32 AM
6 Activity Stop Time	08:32 AM

Description (*)Required	Input Data
1 * Driver ID	12345
2 * Driver's Name	Bowler F. L.
3 Date	01AUG2001
4 Driver's Activity To Log	Driving
5 Activity Start Time	08:32 AM
6 Activity Stop Time	12:00 PM

Hour

09  
10  
11  
12

Minute

00  
01  
02  
03

AM  
PM

Go Ahead Cancel

When a driver wishes to record the findings of his daily tractor and trailer inspection he chooses the inspection form shown on the menu tree. Merlin follows directions built into the Forms display RAK by the trucking SME and presents the following to the driver.

Although not shown there are 70 entries on this form a driver needs to consider, yet each one carries a default so a driver need only concern him or her self with negative findings. In addition, each entry is controlled by a Merlin control object specified by the SME to allows a driver only to choose entries from a data tree, keypad, dropdown, date control object, etc. This ensures that the driver does not have to use the limited keyboard of the PDA.

See the second graphic for further illustration of this. The driver indicated that there was a problem with the oil level. In this case the SME determined that his choices for entry would be displayed on a keypad as shown.

File Tools Help Drivers Help Exit

User: Fred Current Open Form: Drivers Inspection

Description (*)Required	Input Data
1 * Driver ID	12345
2 * Driver's Name	Franks J.E.
3 * Tractor number	98678
4 * Trailer number	1450
5 Location	KC
6 Oil Leak?	NONE
7 Oil Level Ok?	Y
8 Oil Level Problem	Result Box
9 Grease Ok?	Y
10 Grease Problem	Result Box
11 Coolant Ok?	Y
12 Coolant Problem	Result Box
13 Fuel Leak ?	Y
14 Fuel Problem	Result Box
15 Belts Ok?	Y
16 Belt Problem	Result Box
17 Tractor Windows Ok?	Y
18 C/W/D Problem	Result Box
19 Body/Doors Ok?	Y
20 B/D Problem	Result Box
21 Wipers/Washers Ok?	Y
22 W/W Problem	Result Box
23 Seatbelts Ok?	Y
24 Seatbelt Problem	Result Box
25 Mirrors Ok?	Y
26 Mirrors Problem	Result Box

Show Forms  
 Daily Log Summary  
 Daily Activity Log  
 Driver's Inspection  
 Display Data  
 Daily Log Summary  
 Daily Activity Log  
 Driver's Inspection

Save Clear

7	Oil Level Ok?	N									
8	Oil Level Problem	Result Box									
9	Grease Ok?	Y									
10	Grease Problem	<div> Select "Oil Level Ok?" <div>Go Ahead</div> <div>Cancel</div> </div> <table border="1"> <tr> <td>1 QT Low</td> <td>2 QT Low</td> <td>3 QT Low</td> </tr> <tr> <td>5 QT Low</td> <td>6 QT Low</td> <td>7 QT Low</td> </tr> <tr> <td>8 QT Low</td> <td>Stop</td> <td></td> </tr> </table>	1 QT Low	2 QT Low	3 QT Low	5 QT Low	6 QT Low	7 QT Low	8 QT Low	Stop	
1 QT Low	2 QT Low		3 QT Low								
5 QT Low	6 QT Low		7 QT Low								
8 QT Low	Stop										
11	Coolant Ok?										
12	Coolant Problem										
13	Fuel Leak ?										
14	Fuel Problem										
15	Belts Ok?										
16	Belt Problem										

Once collected, personnel at the home office can use Merlin to dynamically display and report on the data.

User: Fred
Current Open Form: Drivers Daily Log Summary

Show Forms

- Daily Log Summary
- Daily Activity Log
- Driver's Inspection
- Display Data
  - Daily Log Summary
  - Daily Activity Log
  - Driver's Inspection

Displaying Data for Form: Drivers Daily Log Summary
Reset

CARRIER	DRIVER NAME	DRIVER ID	CO DRIVER NAME	CO DRIVER ID	DE
HARTT	Silverstein B.D.	1234	Silverstein B.D.		07
HARTT	Heathcliff P.R.	1234	Franko J.E.	2222222	07
HARTT	Rowdy D.L.	8888	Devine D.D.	8888	07

Displaying data for Form: Drivers Inspection
Reset

DRIVER ID	DRIVER NAME	TRACTOR NUMBER ID	TRAILER NUMBER ID	LOCATION
1234	Silverstein B.D.	1234	4321	
1234	Silverstein B.D.	1234	4321	



### Illustration 3 – Merlin Dynamically Generated Clinical Trials Application

This application was built for a pharmaceuticals firm to insure they were able to gather data in real time for a drug under development. Its data entry users were to be medical assistants in physician's offices located around the US so they required an efficient means of acquiring data in a manner that could be a combination of server based, web based, and wireless.

This graphic represents the vehicle the pharmaceutical SME chose to use in acquiring data regarding a visit to a physician by a subject involved in the study. As with any application built with Merlin, the choices an SME has in determining the most effective and efficient method of acquiring data is almost limitless.

Merlin dynamically built each segment of the GUI below using internal controls called for by the data in the RAK tables populated by the pharmaceuticals SME.

The screenshot displays a software interface for data entry. At the top, there is a menu bar with options: 'Show Forms', 'Show Data', 'Drug Help', and 'Exit'. Below the menu bar, the title 'Current Open Form: Drug Visit Data' is visible. On the left side, there is a sidebar with a tree view containing the following items: 'Add Data Forms', 'Demographics', 'Drug Visit Data', 'Display Drug Data', 'Demographics', and 'Drug Visit Data'. The main area of the window contains a table with two columns: 'Description (\*)Required' and 'Input Data'. The table lists 26 items, each with a number in the first column. The input data for each item is as follows:

	Description (*)Required	Input Data
1	* Subject ID	99-1436
2	Visit Date	08/01/2001
3	Visit Time	09:21 AM
4	Visit Type	I
5	Diagnosis Code	N/A
6	* Weight	
7	* BP Systolic	
8	* BP Distolic	
9	Comments	
10	* Temperature	
11	General Health	G
12	Drug Rx?	N
13	Reason	No covered by Ins
14	Dosage Issued	N/A
15	Return Appt Made	
16	Info to Patient?	
17	Meds Considered?	N
18	MED Considered	Result Box
19	Switch frm Diova	N
20	Switch reason	Result Box
21	Drug Treatment	N
22	Add on Treatment	Result Box
23	Adverse React'n?	N
24	Adverse Reaction	Result Box
25	Sudden BP Drop?	N
26	Drop %	Result Box

At the bottom of the window, there are two buttons: 'Save' and 'Clear'.

#### Illustration 4 – various additional Merlin controls and their use.

An illustration follows in which a SME wishes to link up the Merlin clinical system with an existing note system. The SME has populated the Menu\_Control RAK with a series of Action types that will invoke other programs, in this case a note and note history application.

The screenshot shows the Merlin application interface. The menu bar includes File, Encounter, SOC and Orders, Tools, Help, Exit, and Last Menu. The 'Open a Patient' menu is open, showing options: Open a Patient, New Encounter Note, Open Unsigned Note, and View Note History. The 'Current Open Form' is 'New Allergy Data'. The form has a table with the following data:

Description (*)Required
1 * Patient ID

When, for example, Open unsigned note is chosen, the SME has populated the RAK tables so that a user can choose to complete an encounter not for one of their patients. Merlin will perform the task of invoking the external application thus allowing a user to integrated with the other applications, as follows.

The screenshot shows the Merlin application interface with the 'List patients with Unsigned Notes' dialog box open. The dialog box has a 'Search By' section with radio buttons for 'Short ID' (selected), 'Full ID', and 'Name'. The 'User' field is set to 'KEY'. The 'Select User' button is visible. The 'Finish Note(s)' button is highlighted. The list of patients is as follows:

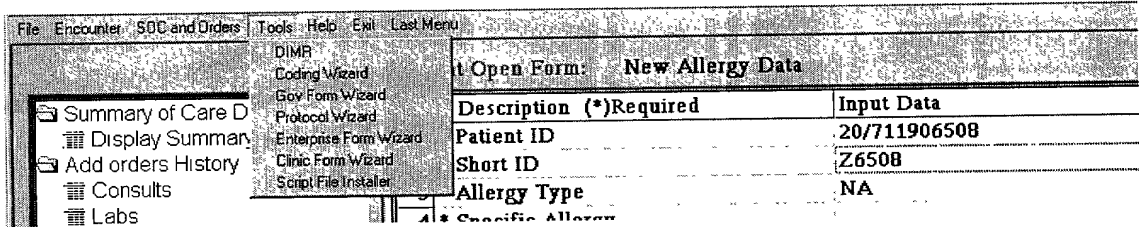
Description (*)Required	Input Data
1 * Patient ID	20/711906508
2 * Short ID	Z6508

Key\_B2213 20-055-62-2213 BARBETTA,EDWARD A  
Key\_Z6508 20-711-90-6508 ZELLER,ALLAN A

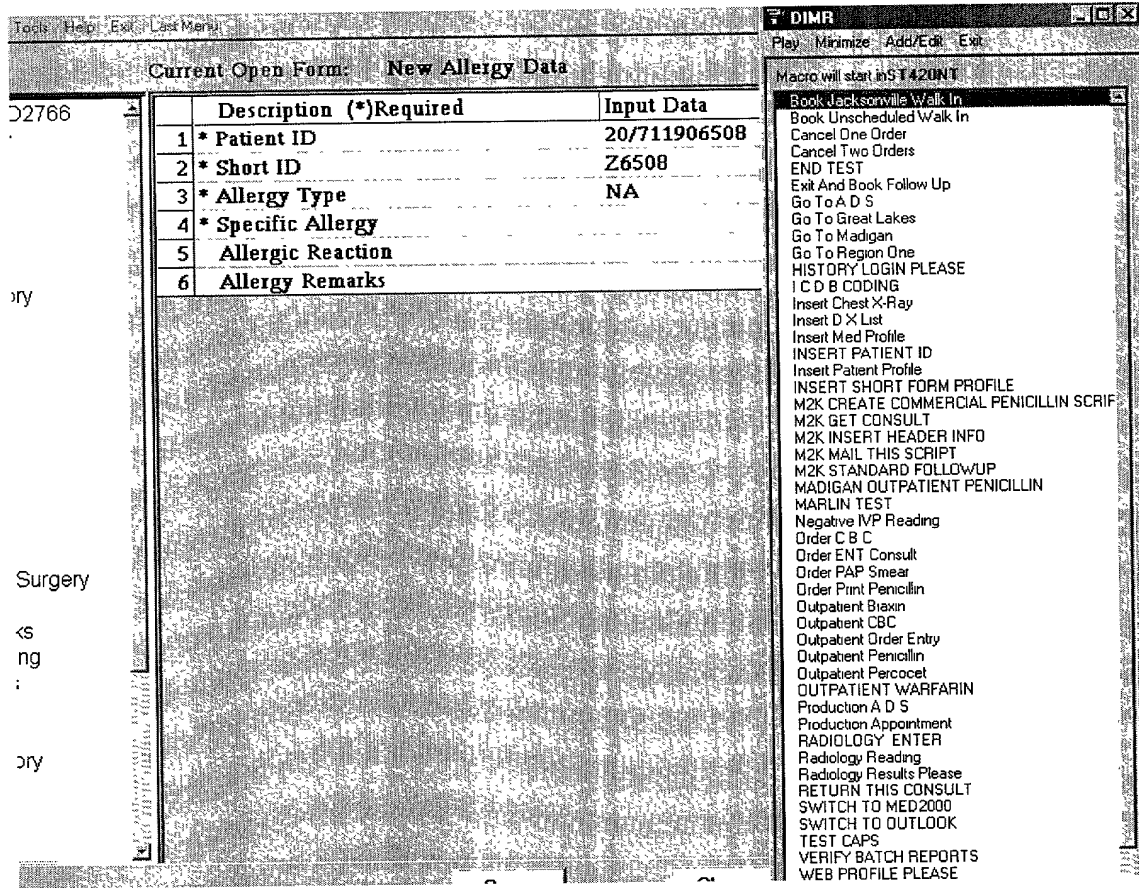
The user can then choose the correct patient and press Finish Note(s). They would then be working in an application outside Merlin.

**Illustration 5 – Merlin’s Data Interchange Macro Recorder Object**

If an SME wants to allow a user to exchange data between the Merlin application and another application they can invoke the Merlin Data Interchange Macro Recorder (DIMR) as follows.



When the DIMR is chosen from the menu, the SME has specified in the RAK tables that the following be presented.



This user can now run the DIMR scripts they built to,

- Extract data from Merlin and drive it into its proper place in one or more different applications,
- Extract data from another application and drive it into its proper place in Merlin
- Automatically populate the Merlin form,
- Automatically populate the Merlin form and drive the data into its proper place in one or more other applications,
- Automatically populate the other application drive the data into its proper place in Merlin.
- Etc.

The DIMR also has a full-featured set of controls to allow a user to easily create, edit and voice activate the control object to play them.

## Illustration 6 – Providing Permissions Through Merlin

If a user who was categorized as administrative logged into Merlin for the clinical information application the SME has determined that their GUI would look somewhat different so they populated the RAK tables with different data for this user type. There is no clinical data menu or tree choice as well as no option to invoke another program. Their tree is limited to patient administrative functions only.

This allows a SME to establish an unlimited number of environments and permissions to use them, all controlled by dynamic menus and dynamic menu trees within one application for the various user types who are allowed to use the system.

File Tools Help Exit Last Menu

Current Open Form: Patient Demographics

	Description (*)Required	Input Data
1	* Patient ID	
2	* Short ID	
3	Name Prefix	
4	* Last Name	
5	* First Name	
6	Middle Name	
7	DOB	31JUL2001
8	Generational Suffix	
9	Professional Suffix	NA
10	Marital Status	
11	Gender	MA
12	Race	OT
13	Religion	OT
14	Primary Care Physician	
15	Primary Care Physician Phone	
16	Patient Has Emer Contacts?	N
17	Is Patient also Guarantor?	N
18	Is Patient Military?	N
19	Patient IEN	
20	Med Treatment Facility	
21	Location of O/P File	
22	Patient SSN	
23	Does Patient have Insurance?	N
24	Patient Photograph	

Save Clear

Patient Demographics Data

- Basic Patient Data
- Address
- Phones
- Emergency Contact
- Military Data
- Insurance
- Guarantor
- Correspondence

**Illustration 7 – Field Format Controls**

Further illustrations of options a SME has for limiting data choices for fields when entered, all through the population of RAK tables with simple instructions that specify a Merlin control object to be used and under what condition.

Using the Merlin clinical information application for illustration, the patient basic demographic form is exposed in the window on the right and the SME has made the following determinations and populated all RAK tables accordingly.

- DOB will use a Merlin control object that allows only the following choices.

7	DOB	31JUL2001
8	Generational Suffix	
9	Professional Suffix	
10	Marital Status	
11	Gender	
12	Race	
13	Religion	
14	Primary Care Physician	
15	Primary Care Physician Phone	
16	Patient Has Emer Contacts?	
17	Is Patient also Guarantor?	
18	Is Patient Military?	

DAY

25  
26  
27  
28  
29  
30  
31

MONTH

JAN  
FEB  
MAR  
APR  
MAY  
JUN  
JUL

YEAR

1995  
1996  
1997  
1998  
1999  
2000  
2001

Go Ahead

Cancel

- Professional Suffix will use a Merlin dropdown control object that allows only the following choices.

9	Professional Suffix	NA=Not Applicable
10	Marital Status	MD=Doctor
11	Gender	DDS=Doctor of Dentistry
12	Race	ESQ=Esquire
13	Religion	CPA=Certified Public Accountant
14	Primary Care Physician	PHD=Doctor of Philosophy
15	Primary Care Physician Phone	OT=Other
16	Patient Has Emer Contacts?	N

- **PICTURE** – If an SME determines that the application requires input and display of digital images regardless of the format, camera, scanner, MRI, x-ray, etc he or she can assign a format of PICTURE to a field. In the following example the patient form has a field called patient photograph. When a user places focus in this field they will be presented with the patients picture as follows.

Current Open Form: Patient Demographics

Description (*)Required	Input Data
1 * Patient ID	
2 * Short ID	
	
24 Patient Photograph	

Save Clear





## YESNO – A Special Control Object

YESNO fields have multiple options for their use.

- YESNO fields with no further options will use a Merlin YESNO control object that allows only the following choices.

16	Patient Has Emer Contacts?	Yes	NO
17	Is Patient also Guarantor?	N	
18	Is Patient Military?	N	

- YESNO fields can also be used as an SME to force the gathering of one additional piece of data depending on the answer provided by a user to the YESNO.

If an SME encounters this situation he or she would immediately follow the YESNO field with a field with a Field\_Format\_CD of RESULT and specify the Merlin control object to be used to gather the data for the additional field.

A separate control object can be used depending on whether the answer is YES or NO.

The optional controls available for acquiring this data are,

1. Tree
2. Keypad
3. Dropdown
4. Or any of the format controls, e.g. TEXT, LONGTEXT, NUMBER, PICTURE, etc.

In the following, an SME has determined that a question dealing with hospitalization directives, if answered NO requires no further entry, but if answered YES, requires a Merlin MILDATE format control object to acquire the data. If a user enters YES in the YESNO field they are presented with a control object to gather the date data as follows. The date will be placed in the RESULT field directly below the YESNO.

RESULT fields are locked to direct entry.

Current Open Form: New Hospital Surgery History Data

Description (*)Required	Input Data
1 * Patient ID	
2 * Short ID	
3 * Date of Hosp or Surgery	31JUL2001
4 Advance Directive Provided?	N
5 Advance Directive Returned?	Y
6 Returned When?	Result Box
7 Inpatient Note ID	UNK
8 Hosp Surgery Remarks	

DAY	MONTH	YEAR
01	JAN	1995
02	FEB	1996
03	MAR	1997
04	APR	1998
05	MAY	1999
06	JUN	2000
07	JUL	2001

- Summary of Care DD2766
- Display Summary
- Add orders History
- Consults
- Labs
- Meds
- Rads
- Display Orders History
- Consults
- Labs
- Meds
- Rads
- Add Clinical History
- Medical Alerts
- Chronic Illnesses
- Allergies
- Counseling
- Family
- Hospitalization & Surgery
- Immunization
- Occupational Risks
- Readiness Tracking

- There are still other situations when the response to a YESNO field will require more than one additional piece of data depending on the answer provided to the YESNO.

If an SME encounters this situation in developing their application he or she would specify a Form\_ID in either the Yes\_Form\_ID or the No\_Form\_ID on the YESNO row in Form\_Display.

If either situation were discovered to be true by the Merlin display event control object, it would immediately invoke the Merlin Form control object using the appropriate Form\_ID and stop accepting data event entries on the currently exposed form.

The Merlin Form Control object would immediately expose the requested form in a manner that did not completely cover the current form. It would accept data entry events from this new form and return to the calling form when a user was complete.

The following illustrates this.

On the patient form there is a question – Patient has Emergency Contact?

File Tools Help Exit Last Menu Exit Last Menu

Current Open Form: Patient Demographics

Description (*)Required	Input Data
1 * Patient ID	
2 * Short ID	
3 Name Prefix	
4 * Last Name	
5 * First Name	
6 Middle Name	
7 DOB	31JUL2001
8 Generational Suffix	
9 Professional Suffix	NA
10 Marital Status	
11 Gender	MA
12 Race	OT
13 Religion	OT
14 Primary Care Physician	
15 Primary Care Physician Phone	
16 Patient Has Emer Contacts?	Y
17 Is Patient also Guarantor?	N
18 Is Patient Military?	N
19 Patient IEN	

☒ Patient Demographics Data  
☐ Basic Patient Data  
☐ Address  
☐ Phones  
☐ Emergency Contact  
☐ Military Data  
☐ Insurance  
☐ Guarantor  
☐ Correspondence

If answered in the affirmative the following would be brought to focus. The patient form is still up but the Emergency contact form is now in front and in focus. When data in this form is complete, Merlin will return to the patient form.

File Tools Help Exit Last Menu Exit Last Menu

Current Open Form: Patient Demographics

Description (*)Required	Input Data
1 * Patient ID	
2 * Short ID	
3 Name Prefix	
4 * Last Name	
5 * First Name	
6 Middle Name	
7 DOB	31JUL2001
8 Generational Suffix	
9 Professional Suffix	NA
10 Marital Status	
11 Gender	MA
12 Race	OT
13 Religion	OT
14 Primary Care Physician	
15 Primary Care Physician Phone	
16 Patient Has Emer Contacts?	Y

☒ Patient Demographics Data  
☐ Basic Patient Data  
☐ Address  
☐ Phones  
☐ Emergency Contact  
☐ Military Data  
☐ Insurance  
☐ Guarantor  
☐ Correspondence

Description (*)Required	Input Data
1 * Patient ID	
2 * Short ID	
3 Name Prefix	
4 * Last Name	
5 * First Name	
6 Middle Name	
7 Gender	MA
8 Primary Phone	
9 Secondary Phone	
10 Alternate Phone	

Save Clear

## Field Format Object List

Similarly there is a Merlin control object for each of the following situations with more being continually added. This gives an SME a set of powerful controls from which to choose when attempting to limit a users choices at input time.

- TEXT – Alphanumeric entry up to 30 characters.
- LONGTEXT - Alphanumeric entry up to 255 characters
- MEMO - Alphanumeric entry up to 65,000 characters
- NUMBER – Integers and decimals
- COMDATE – Accepts dates in the format MM/DD/YYYY
- COMTIME - Accepts time in the format of a 12 hour clock
- MILDATE - Accepts dates in the format DDMMYYYY (14JAN2001)
- MILTIME - Accepts time in the format of a 24 hour clock
- YESNO – TRUEFALSE, shown as Y or N, but stored as 0, -1
- KEYPAD - Indicates the data must be selected from a Keypad display object
- DROPDOWN - Indicates the data must be selected from a Dropdown display object
- TREE – Indicates the data must be selected from a Data Tree display object
- RESULT – Special object that receives input only from another object, e.g. Data Tree, Keypad, Dropdown, TEXT, NUMBER, alternate Form object, etc. never from direct user input. RESULT is used after a YESNO when entry in the RESULT field is required only if a previous answer dictates that it is necessary. Also used to automatically invoke a different Form object based on answers
- ZIP - Allows 9 digit zip in the format, NNNNN-NNNN
- PHONE - Allows 10 digit phone entry in the format, NNN.NNN.NNNN
- YEAR - Allows 4 digit years within the range 1880-2100

## Illustration 8 – Displaying Data

In the example of the physician, if he or she wished to review clinical data he or she would choose the correct nodes from the tree on the left and the data would be displayed in the window on the right as follows.

Current Open Form: **New Allergy Data**

- Summary of Care DD2766
  - Display Summary
- Add orders History
  - Consults
  - Labs
  - Meds
  - Rads
- Display Orders History
  - Consults
  - Labs
  - Meds
  - Rads
- Add Clinical History
- Display Clinical History
  - Medical Alerts
  - Chronic Illnesses
  - Allergies
  - Counseling
  - Family
  - Hospitalization & Surgery
  - Immunization
  - Occupational Risks
  - Readiness Tracking
  - Screening Exams
  - Social
  - Vitals

Displaying Data for Form: **New Chronic Illness Data** [Reset](#)

User ID	Form ID	Marin Date	Marin Time	Patient ID
	HISTORY_CHRONIC_ILLN	07/16/2001	04:35:15 PM	20/017983
	HISTORY_CHRONIC_ILLN	07/16/2001	04:35:15 PM	20/017983
	HISTORY_CHRONIC_ILLN	07/16/2001	04:35:15 PM	20/017983
	HISTORY_CHRONIC_ILLN	07/16/2001	04:35:15 PM	20/017983
	HISTORY_CHRONIC_ILLN	07/16/2001	04:35:15 PM	20/017983
	HISTORY_CHRONIC_ILLN	07/16/2001	04:35:15 PM	20/017983
	HISTORY_CHRONIC_ILLN	07/16/2001	04:35:15 PM	20/017983
	HISTORY_CHRONIC_ILLN	07/16/2001	04:35:15 PM	20/017983
	HISTORY_CHRONIC_ILLN	07/16/2001	04:35:15 PM	20/017983
	HISTORY_CHRONIC_ILLN	07/16/2001	04:35:15 PM	20/017983

Displaying data for Form: **New Allergy Data** [Reset](#)

User ID	Form ID	Marin Date	Marin Time	Patient ID
	HISTORY_ALLERGIES	07/16/2001	04:32:54 PM	20/017983
	HISTORY_ALLERGIES	07/16/2001	04:35:05 PM	20/017983
	HISTORY_ALLERGIES	07/17/2001	02:02:14 PM	20/345672
	HISTORY_ALLERGIES	07/16/2001	04:32:54 PM	20/017983
	HISTORY_ALLERGIES	07/16/2001	04:35:05 PM	20/017983
	HISTORY_ALLERGIES	07/17/2001	02:02:14 PM	20/345672

A user can select any row and edit it if allowed by the SME, select a column and sort it ascending or descending, and select any column and perform a search for any data from in the column. All rows found that meet the search criteria are exposed.

Reiteration – All of the above are established by a business SME and changeable on the fly as warranted, without programmer intervention.

Summary – Through this short set of illustrations that depict only a minor fraction of the power of Merlin and its controls, as well as only a minor fraction of the power an SME has in choosing how to use these controls a reader should be able to begin to grasp the elements that will allow them to become originators of applications built entirely without programming and entirely under their control.

## Illustration 9 - Help

The Merlin control objects provided to assist an SME in building Help for the intended users of the application come in three flavors.

- Quick Tips
- Specific help for a particular field on a form
- Standardized application level help built using the Merlin SYSTEMHELP control object. This provides an easy method for an SME to create 'How Do I?' and 'Index' hyper linked help subjects.

### Quick Tip Help

This facility allows a SME to specify that a short timer message should appear over the field on a form when a user right clicks the label. The help message is limited to the size of the field and it only appears for a time in milliseconds specified by the SME.

For example, on the following the SME has populated the Quick Tip for Allergic Reaction with the brief message being shown. It will appear for 90 seconds and then disappear. The time is controlled by the SME.

	Description (*)Required	Input Data
1	* Patient ID	20/711906508
2	* Short ID	Z6508
3	* Allergy Type	NA
4	* Specific Allergy	
5	Allergic Reaction	Be very specific with details
6	Allergy Remarks	

### Specific help for a particular field

This facility allows a SME to build a help file for a field(s) specified in the Form\_Display RAK and specify that the field has Help. This will cause Merlin to automatically display a Help indicator on the menu when a user has a field in focus for which the SME has built help.

On the above illustration the SME built more detailed help for Allergy Remarks. When a user chooses help for this field, the Merlin Field Help Control object would expose the help as follows.

Current Open Form: **New Allergy Data**

	Description (*)Required	Input Data
1	* Patient ID	20/711906508
2	* Short ID	Z6508
3	* Allergy Type	NA
4	* Specific Allergy	
5	Allergic Reaction	
6	Allergy Remarks	

**Allergy Remarks.**

Please indicate any additional information regarding this patient's allergy that would be helpful to clinical personnel in the future. Include period of time patient has suffered from the allergy, special considerations and treatments received in the past, etc.

### Merlin system level application help

This facility allows a SME to build standard HTML help files that the Merlin system level help object will display when this help is chosen. The SME controls where the help menu goes – either on the menu, or as an alternative on the menu tree as the following example shows.

Current Open Form: Patient Demographics		
	Description (*)Required	Input Data
1	* Patient ID	
2	* Short ID	
3	Name Prefix	
4	* Last Name	
5	* First Name	
6	Middle Name	
7	DOB	01AUG20
8	Generational Suffix	
9	Professional Suffix	NA
10	Marital Status	
11	Gender	MA
12	Race	OT

Patient Demographics Data
 

- Basic Patient Data
- Address
- Phones
- Emergency Contact
- Military Data
- Insurance
- Guarantor
- Correspondence
- System Help
- Display Help

When a user asks for help they are shown a standard Merlin help control object that gives a user 3 levels of help that have all been constructed by the application SME. The following is for a clinical information system.

When first exposed it displays an overview of the application in the window on the right and the index list of help categories on the left. The tabs allow a user to switch between the high level 'How Do I' categories and the index list of detailed help instructions.

Index | How Do I | Exit Help

Type in the Keyword to Find


AA\_M2K Overview.htm  
 Adding your own vocabulary.htm  
 Audio setup Wizard.htm  
 Beginning a new line.htm  
 Beginning a new paragraph.htm  
 Building an exceptional voice model.htm  
 Capitalizing an utterance.htm  
 Changing Environments.htm  
 Changing patient basic information.htm  
 Changing your password.htm  
 Chronic Care Flow Sheet.htm  
 Clinic - Setting up or Changing.htm  
 Copy selected text.htm  
 Correcting misrecognitions.htm  
 Create a new File Folder.htm  
 Creating a signature line.htm  
 Date and time.htm  
 Deleting highlighted text.htm  
 Dialogue boxes-what are they.htm  
 Dictating into other applications.htm  
 Dictation versus commands.htm  
 Documents - new or existing.htm  
 Eliminating outside noise from being heard.htm  
 Encounter note - completing unsigned and in progress.htm  
 Encounter note - deleting an unsigned note.htm  
 Encounter note - dictating a new note.htm  
 Encounter note - process workflow overview.htm  
 Encounter note - signing closing and locking.htm  
 Encounter notes - show all unsigned by user.htm  
 Encounter notes - show me my unsigned notes.htm  
 Environments - what are they.htm

Display

### CDSIHELP

?

Introducing



M2K is a Computer-Based Patient Record System (CPRS) and clinical workflow system. As such it enables you to control your computer, create and manage patient records and documents, utilize standard forms to create reports, progress notes, doctor's orders, consults, etc. as well as interface with other systems on your desktop -- simply through any combination of keyboard, mouse or your natural voice.

Although voice recognition and dictation may be new concepts to you, they are easy to learn. The more you use M2K, the better you are recognized and the faster your patient notes are documented to local medical facility as well as Enterprise standards. After using M2K for a short time, you will be able to create and manage all required CPRS documentation -- much faster than with prior methods.

M2K was designed and built to be operated exclusively by voice, exclusively by keyboard and mouse, or in any combination of the three as a user sees fit. This allows each user to determine how they can be most comfortable and gain the most productivity using M2K.



## APPENDIX 2



## User Guide

***"I am Merlin. I'm at your service." --- From a tale still told  
in Brittany***



# The Wizard of Merlin

## *I. Merlin, CDSI's Dynamic Application Generator Overview*

Merlin is a complete visual development environment composed of sophisticated programs that are unconstrained by application-specific intelligence and are driven by a series of RAK – Repository of Application tables that are populated by a business Subject Matter Expert (SME) --- not a programmer.

Merlin automatically and dynamically generates business applications capable of capturing, updating, storing, and bilaterally replicating data across normal application barriers. MERLIN accomplishes this by following English instructions created by SME's through an easy to follow person-machine dialogue in which the application specifications are stored as data in a set of tables referred to as RAK tables. This ensures that the functionality of the business application is specified and modified by an analyst who is a business Subject Matter Expert, not the creation and modification of programming code by an expensive programmer.

This technique ensures that what traditionally has been an extremely time consuming and expensive Information Technology (I/T) process to build and maintain systems --- can now become a user driven and controlled process.

Merlin was constructed using an industry standard visual-software-platform that provides common access across a wide variety of hardware platforms spread geographically.

The power of Merlin is as applicable to the trucking industry as it is to medicine, to pharmaceuticals, to insurance, to any industry, company, organization, or individual with a desire to regain control of their data and applications or with a desire to more dynamically manage their data in a fast changing world.

## II. Merlin RAK Management Wizard (MRAK-Wizard)

The following is a brief description of the Merlin Repository of Application Knowledge Management Wizard (MRAK-Wizard).

A SME's primary interface to Merlin, its controls and Repository of Application Knowledge (RAK) tables is through (MRAK-Wizard). This wizard is used by the SME to either dynamically build or modify the data in these tables, data that in turn drives Merlin.

Note: as each new component is added or modified by an SME he or she can invoke Merlin and witness the result of their undertaking. This allows an SME to prototype as they build; quickly catching any mistakes they might make and take corrective action.

The screenshot displays the MRAK-Wizard interface. At the top, a table lists keypad data:

Keypad ID	Seq Number	Display Text	Entry Text
Address_Designation_CD	10	Domestic	US
Address_Designation_CD	20	Foreign	FA
Address_Designation_CD	30	E-Mail	EM
Address_Designation_CD	40	...	...

Below the table, the interface is divided into two main sections. On the left, under "Select Form to Change:", a dropdown menu shows "New Allergy Data". Below that, under "Select Table to Change:", a list of tables is shown, including "CoverSheet\_Display", "DropDown\_Control", "Exe\_Control", "Form\_Control", "Form\_Display", "Icon\_Control", "Keypad\_Control", "Menu\_Control", "Menu\_Tree", "Search\_Control", "System\_Control", "Tree\_Control", and "VB\_Controls". On the right, a form titled "Change Keypad Control" is displayed. It includes buttons for "Save", "Delete", "Add", and "Cancel". Below these buttons, it shows "Displaying Row Number: 1". A section titled "Make Changes as Required!" contains a list of fields: "Keypad\_ID", "Address\_Designation\_CD", "Seq\_Number", "10", "Display\_Text", "Domestic", "Entry\_Text", and "US".

The above is the primary wizard GUI that allows an SME to,

- Select RAK tables to change.
- Select forms to change if applicable
- Select a row in a table to change
- Select columns in a row to change
- Modify entered data
- Add new choices for data
- Add or modify Merlin Control objects to be used.
- Rearrange displayed forms, trees, menus, fields, keypads, etc
- Specify new or changed codes to be stored in an application database
- Add new trees, menus, dropdowns, keypads, forms, etc.
- Rearrange which users get which functions and features,
- Add new features as dictated by the needs of the business,
- Etc.

The choices for how to build and expose an application are limited only by the mind of the SME and the needs of the business.

### **MRAK-Wizard Illustration1**

In the above example an SME has chosen to change the KeyPad\_Control RAK. The data is displayed as follows.

- The window on the right exposes the columns from first Keypad\_ID from the RAK in the large pane on the right. These columns and their data are shown in a tree format.
- The name of the keypad is displayed in a dropdown combo box at the upper right.
- The rows from this RAK are exposed in the window at the top.

At this point a SME can,

- Modify data from one or more of the columns (tree nodes shown) by double clicking it.

Following is an example of a SME double clicking Domestic below. They are presented with a text box in which they can change the description of a keypad shown to a user to anything up to 18 characters.

A SME can also change Seq\_Number so the keypad choice does not show up first in the keypad choices but 2<sup>nd</sup>, 3<sup>rd</sup>, last etc.

The Entry\_Text is what is to be stored in the application database when Domestic is selected by a user. It can also be changed.

## MRAK-Wizard Illustration 2

In our illustrations using the clinical application and the MRAK-Wizard, if a user of the Merlin clinical application chooses address designation on a dynamically generated form they will be presented with a keypad as follows.

4	Address Designation
5	Address Line 1
6	Address Line 2
7	Address Line 3
8	Attention:
9	City
10	State
11	ZIP
12	Carrier Code
13	E-Mail Address
14	Country
15	Country Mailing Code

AL

Select "Address Designation"			Go Ahead	Cancel
Domestic	Foreign	E-Mail		
APO	FPO	Other		

If the SME then uses the MRAK-Wizard and changes Domestic to Continental US and the Seq\_Number to 60, when the clinical user chooses address designation next he or she will be presented with the following.

4	Address Designation	
5	Address Line 1	
6	Address Line 2	
7	Address Line 3	
8	Attention:	
9	City	
10	State	AL
11	ZIP	
12	Carrier Code	
13	E-Mail Address	
14	Country	
15	Country Mailing Code	

Select "Address Designation" Go Ahead Cancel

Foreign	E-Mail	APO
FPO	Continental US	Other

The main MRAK-Wizard GUI Keypad example continued

The screenshot shows a software interface for editing keypad data. At the top, there is a table with the following data:

Keypad_ID	Seq Number	Display_Text	Entry_Text
Address_Designation_CD	10	Domestic	US
Address_Designation_CD	20	Foreign	FA
Address_Designation_CD	30	E-Mail	EM

Below the table, there are two main sections:

- Select Form to Change:** A dropdown menu showing "New Allergy Data".
- Select Table to Change:** A list box containing various table names: CoverSheet\_Display, DropDown\_Control, Exe\_Control, Form\_Control, Form\_Display, Icon\_Control, Keypad\_Control, Menu\_Control, Menu\_Tree, Search\_Control, System\_Control, Tree\_Control, and VB\_Controls.

On the right side, there is a form for editing the selected row:

- Buttons:** Save, Delete, Add, Cancel.
- Select: Keypad\_ID:** A dropdown menu showing "Address\_Designation\_CD".
- Change Keypad Control:** A section with a "Displaying Row Number: 1" label.
- Make Changes as Required!** A section with checkboxes for:
  - ☐ Keypad\_ID
  - ☐ Address\_Designation\_CD
  - ☐ Seq\_Number (value: 10)
  - ☐ Display\_Text (value: Domestic)
  - ☐ Entry\_Text (value: US)

In addition to merely changing existing data shown, a SME can,

- Choose a different row in the keypad shown to change,
- Choose a different keypad and row to change,
- Add a new row to an existing keypad,

- Add a new keypad, etc.

The process used in illustrating changes and modifications to the KeyPad\_Control RAK, although not extensive in nature due to the limited functionality of a keypad control object, is very similar to that a SME will encounter using the MRAK-Wizard to manage any and all RAK control tables.

### MRAK-Wizard Illustration 3

An SME decides it is necessary to change the New Counseling Data dynamically generated form.

On the MRAK-Wizard thee would choose the RAK table – Form\_Display, and the Form – New Counseling Data. They would be presented with the following.

Form ID	Seq Number	Field Name	Label Display Text	Display Size
History_Counseling	100	Patient_ID	Patient ID	14
History_Counseling	200	Short_ID	Short ID	5
History_Counseling	300	Counseling_CD	Counseling Type	6

Select Form to Change: New Counseling Data

Select Table to Change:

Table List

- CoverSheet\_Display
- DropDown\_Control
- Exe\_Control
- Form\_Control
- Form\_Display
- Icon\_Control
- Keypad\_Control
- Menu\_Control
- Menu\_Tree
- Search\_Control
- System\_Control
- Tree\_Control
- VB\_Controls

Change Form Display

Displaying Row Number: 3

- Counseling\_CD
- Label\_Display\_Text
  - Counseling Type
- Display\_Size
  - 6
- Data\_Link\_Number
  - Null
- Required\_IND
  - 1
- Help\_IND
  - 0
- Field\_Format\_CD
  - DROPDOWN**
- Data\_Type
  - Null
- Default\_Value
  - Null
- Yes\_DropDown\_ID
  - Counseling\_CD
- No\_DropDown\_ID

As with the keypad RAK they can choose to change the current row, position the GUI on a different row to be changed, or add a new row.

On the above example the field Counseling\_CD calls for a Field\_Format\_CD of DROPDOWN, meaning the Merlin Dropdown control object will access the Dropdown\_Control RAK table using the Dropdown\_ID found in



Yes\_Dropdown\_ID above to display a list of choices when a user of the Merlin Clinical application attempts to enter data in this field.

It would look like the following to the Merlin Clinical application user.

Current Open Form: New Counseling Data

Description (*)Required	Input Data
1 * Patient ID	
2 * Short ID	
3 * Counseling Type	OT=Other
4 Counseling Remarks	ASUB=Alcohol or Substance Abuse CANP=Cancer Prevention DENT=Dental FAMP=Family Planning FIT=Fitness

If the SME using the MRAK-Wizard above decided to change this from a dropdown to a data Tree they would

- Change Field\_Format\_CD to TREE,
- Change Dropdown\_ID to NULL
- Change Yes\_Tree\_ID to Counseling\_CD.
- Establish the Counseling\_CD rows in the Tree\_Control RAK.

The next time a user of the Merlin clinical application chose to enter counseling history data they would not be presented with the dropdown above, but with a data tree as follows.

Current Open Form: New Counseling Data

Description (*)Required	Input Data
1 * Patient ID	
2 * Short ID	
3 * Counseling Type	
4 Counseling Remarks	

The illustrations and examples are limitless as is the flexibility and options presented to a business SME for how an application is built, presented to end users and managed.

#### MRAK-Wizard Illustration 4

In our illustrations using the clinical application and the MRAK-Wizard, if the SME determines that their users should have access to the Merlin Data Interchange Macro Recorder (DIMR) object, the SME would use the MRAK-Wizard to,

- Add a new MAIN and SUB menu choice or simply a new SUB under an existing MAIN that would indicate that the RUNEXE Merlin object was to be invoked and that the EXE\_ID was to be DIMR, or whatever name they chose.
- They would then add a new row to the EXE\_Control RAK as follows.

Exe_ID	Seq Number	Exe Path
DIMR	100	C:\M2K_DIMR\DIMR.exe
CODING_WIZARD	200	C:\M2K_WORKSTATION\Codingwizard.exe
Protocol_Wizard	210	C:\M2K_WORKSTATION\ProtocolWizard.exe

Select Form to Change:  
Open a Patient

Select Table to Change:  
Table List  
- CoverSheet\_Display  
- DropDown\_Control  
- Exe\_Control  
- Form\_Control  
- Form\_Display  
- Icon\_Control

Change EXE Control  
Displaying Row Number: 1  
Make Changes as Required!  
Exe\_ID: DIMR  
Seq Number: 100  
Exe Path: C:\M2K\_DIMR\DIMR.exe

When the application menu was refreshed it might then look similar to this.

File Tools Help Exit Last Menu Merlin Help Exit Last Menu

**DIMR**

- Gov Form Wizard
- Protocol Wizard
- Enterprise Form Wizard
- Clinic Form Wizard
- Script File Installer
- Phones
- Emergency Contact
- Military Data
- Insurance
- Guarantor
- Correspondence

Current Open Form: Patient Demographics

	Description (*)Required	Inj
1	* Patient ID	
2	* Short ID	
3	Name Prefix	
4	* Last Name	
5	* First Name	
6	Middle Name	
7	DOB	01
8	Generational Suffix	

When a user chooses DIMR from the menu the following will be exposed.

	Description (*)Required	Input Data
1	* Patient ID	
2	* Short ID	
3	Name Prefix	
4	* Last Name	
5	* First Name	
6	Middle Name	
7	DOB	01AUG2001
8	Generational Suffix	
9	Professional Suffix	NA
10	Marital Status	
11	Gender	MA
12	Race	OT
13	Religion	OT
14	Primary Care Physician	
15	Primary Care Physician Phone	
16	Patient Has Emer Contacts?	N
17	Is Patient also Guarantor?	N
18	Is Patient Military?	N
19	Patient IEN	
20	Med Treatment Facility	
21	Location of O/P File	
22	Patient SSN	
23	Does Patient have Insurance?	N
24	Patient Photograph	

The DIMR is a Merlin object and wizard that allows a user to easily and quickly build macro scripts that can,

- Extract data from Merlin and drive it into its proper place in one or more different applications,
- Extract data from another application and drive it into its proper place in Merlin
- Automatically populate the Merlin form,
- Automatically populate the Merlin form and drive the data into its proper place in one or more other applications,
- Automatically populate the other application drive the data into its proper place in Merlin.
- Etc.

The DIMR also has a full-featured set of controls to allow a user to easily create, edit and voice activate the control object to play the scripts.

The DIMR wizard is covered later in this document.

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### III. Merlin's Help Wizards

The Merlin control objects provided to assist an SME in building Help for the intended users of the application come in three flavors.

- Quick Tips
- Specific help for a particular field on a form
- Standardized application level help built using the Merlin SYSTEMHELP control object. This provides an easy method for an SME to create 'How Do I?' and 'Index' hyper linked help subjects.

1. Quick Tip – This facility allows a SME to specify that a short timer message should appear over the field on a form when a user right clicks the label. The help message is limited to the size of the field and it only appears for a time in milliseconds specified by the SME.

For example, on the following the SME has utilized the MRAK-Wizard to,

- Select the New Allergy Data form,
- Select the Form Display RAK,
- Select the row that represents the field for Allergy reaction, and
- Modify the Quick Tip to 'Be very specific with details'.

Form ID	Seq Number	Field Name	Label Display Text	Display Size
History_Allergies	500	Allergic_Reaction	Allergic Reaction	50
History_Allergies	600	Allergy_Remarks	Allergy Remarks	255

Select Form to Change:

New Allergy Data

Select Table to Change:

Table List

- CoverSheet\_Display
- DropDown\_Control
- Exe\_Control
- Form\_Control
- Form\_Display
- Icon\_Control
- Keypad\_Control
- Menu\_Control
- Menu\_Tree
- Search\_Control
- System\_Control
- Tree\_Control
- VB\_Controls

Save

Change Form Display

Displaying Row Number: 5

- ☐ Yes\_DropDown\_ID  
Null
- ☐ No\_DropDown\_ID  
Null
- ☐ Yes\_Tree\_ID  
Null
- ☐ No\_Tree\_ID  
Null
- ☐ Yes\_KeyPad\_ID  
Null
- ☐ No\_KeyPad\_ID  
Null
- ☐ Yes\_Format\_Control  
Null
- ☐ No\_Format\_Control  
Null
- ☐ Quick\_Tip  
Be very specific with details

The SME then decided to change the time these quick tips would be displayed before disappearing. To accomplish this, the SME utilized the MRAK-Wizard to,

- Select the Form\_Control RAK,
- Modify the System Timer to 1500 milliseconds as follows.

Seq Number	Voice	System Timer	With Users
100	NO	1500	NO

Select Form to Change:

New Allergy Data

Select Table to Change:

Table List

- CoverSheet\_Display
- DropDown\_Control
- Exe\_Control
- Form\_Control
- Form\_Display
- Icon\_Control
- Keypad\_Control
- Menu\_Control
- Menu\_Tree
- Search\_Control
- System\_Control
- Tree\_Control
- VB\_Controls

Save

Change System Control

Make Changes as Required!

- ☐ Seq\_Number  
100
- ☐ Voice  
NO
- ☐ System\_Timer  
1500
- ☐ With\_Users  
NO

Invoking Merlin after this change the SME would see the following Quick Tip when right clicking on Allergic Reactions.

	Description (*)Required	Input Data
1	* Patient ID	20/711906508
2	* Short ID	Z6508
3	* Allergy Type	NA
4	* Specific Allergy	
5	Allergic Reaction	Be very specific with details
6	Allergy Remarks	

2. Specific help for a particular field – This facility allows a SME to build a help file for a field(s) This will cause Merlin to automatically display a Help indicator when a user has a field in focus for which the SME has built help.

For example, on the following the SME has utilized the MRAK-Wizard to,

- Select the New Allergy Data form,
- Select the Form Display RAK,
- Select the row that represents the field for Allergy Remarks, and
- Changed the Help\_IND from 0 (NO) to -1(YES).

Form ID	Seq Number	Field Name	Label Display Text	Display Size
History_Allergies	500	Allergic_Reaction	Allergic Reaction	50
History_Allergies	600	Allergy_Remarks	Allergy Remarks	255

**Select Form to Change:**  
New Allergy Data

**Select Table to Change:**  
**Table List**

- CoverSheet\_Display
- DropDown\_Control
- Exe\_Control
- Form\_Control
- Form\_Display
- Icon\_Control
- Keypad\_Control
- Menu\_Control
- Menu\_Tree
- Search\_Control
- System\_Control
- Tree\_Control
- VB\_Controls

**Save**

**Change Form Display**  
Displaying Row Number: 6

**Make Changes as Required!**

- ☐ Form\_ID
- ☐ History\_Allergies
- ☐ Seq\_Number  
600
- ☐ Field\_Name  
Allergy\_Remarks
- ☐ Label\_Display\_Text  
Allergy Remarks
- ☐ Display\_Size  
255
- ☐ Data\_Link\_Number  
Null
- ☐ Required\_IND  
0
- ☐ Help\_Ind  
-1
- ☐ Field\_Format\_CD  
LONGTEXT
- ☐ Data\_Type

The SME then built a standard RTF file in the Merlin text file note pad that stored it in the Merlin Help directory with the name Allergy\_Remarks.

When a user chooses help for this field, the Merlin Field Help Control object would expose the help as follows.

Current Open Form: **New Allergy Data**

	Description (*)Required	Input Data
1	* Patient ID	20/711906508
2	* Short ID	Z6508
3	* Allergy Type	NA
4	* Specific Allergy	
5	Allergic Reaction	
6	Allergy Remarks	

**Allergy Remarks**

Please indicate any additional information regarding this patient's allergy that would be helpful to clinical personnel in the future. Include period of time patient has suffered from the allergy, special considerations and treatments received in the past, etc.

**Save** **Clear**

2000-04-04 14:55:00



- Merlin system level application help - This facility allows a SME to build standard HTML help files that the Merlin system level help object will display when this help is chosen.

For example, on the following the SME has utilized the Help Object-Wizard to build and display a new index HTML help file on the use of keypads. When chosen by the user it will appear exactly as the SME built it since the Wizard to build help files and the wizard to display them to a user is the same. The only difference is in the options of use allowed a SME as opposed to an application system user.

Index
Show Doc
Exit Help

Type in the Keyword to Find

- Patient ID - what is it.htm
- Patient information dialog box.htm
- Patient information header - date patient ID patient name.htm
- Patient's basic information - inserting.htm
- Print options.htm
- Printing.htm
- Production Environment.htm
- Protocols - Building and using.htm
- Recognition - improving.htm
- Restarting the M2K title bar.htm
- Show a list of user created commands.htm
- Showing me a list - what do I do.htm
- Signing a note before sending to history.htm
- Speaking into other applications.htm
- Summary of care.htm
- Tables - creating.htm
- Templates - Acquiring from another User.htm
- Templates - an overview.htm
- Templates - modifying a template.htm
- Training Environment.htm
- Underscores in a template.htm
- Undo previous action.htm
- Unsigned notes - show me mine.htm
- User ID - establishing.htm
- Using a Keypad.htm
- Vocabulary editor.htm
- Voice - general training.htm
- Voice commands versus dictation of words.htm
- Voice control of menus or dialog boxes.htm
- Wizard - audio set up.htm
- Wizard - Building Macro Scripts.htm

### Using Keypads

Keypads are used by the system to allow you a quick selection when the choices are limited but specific. In the following example if you were entering a new allergy for a patient when you get to Allergy Type you will be shown the following

Description (*)	Required	Input Data
1 Patient ID		
2 Chart ID		
3 Allergy Type		NA
4 Specific Allergy		
5 Allergic Reaction		
6 Allergy Remarks		

Select Allergy Type

Food	Medication

You can select any one of the three choices by tabbing to it and pressing the enter key or by left clicking your mouse on the selection. If your choice is Medication, then either method will produce the following results

New Allergy Data		
Description (*)	Required	Input Data
1 Patient ID		
2 Chart ID		
3 Allergy Type		MED
4 Specific Allergy		
5 Allergic Reaction		
6 Allergy Remarks		

## **VI. Merlin's Data Interchange Macro Recorder (DIMR) Wizard**

The DIMR is a comprehensive set of Visual programs that allow a user to record any repeatable series of task bar application switching, keystrokes, mouse clicks, etc. and have them saved within a macro that can be played with the simple issuance of a voice command, mouse click or keyboard entry.

The DIMR is a Merlin object and wizard that allows a user to easily and quickly build macro scripts that can,

- Extract data from Merlin and drive it into its proper place in one or more different applications,
- Extract data from another application and drive it into its proper place in Merlin
- Automatically populate the Merlin form,
- Automatically populate the Merlin form and drive the data into its proper place in one or more other applications,
- Automatically populate the other application drive the data into its proper place in Merlin.
- Drive down the normal hierarchical menu system typically found in legacy systems.
- Exchange data with a legacy system
- Etc.

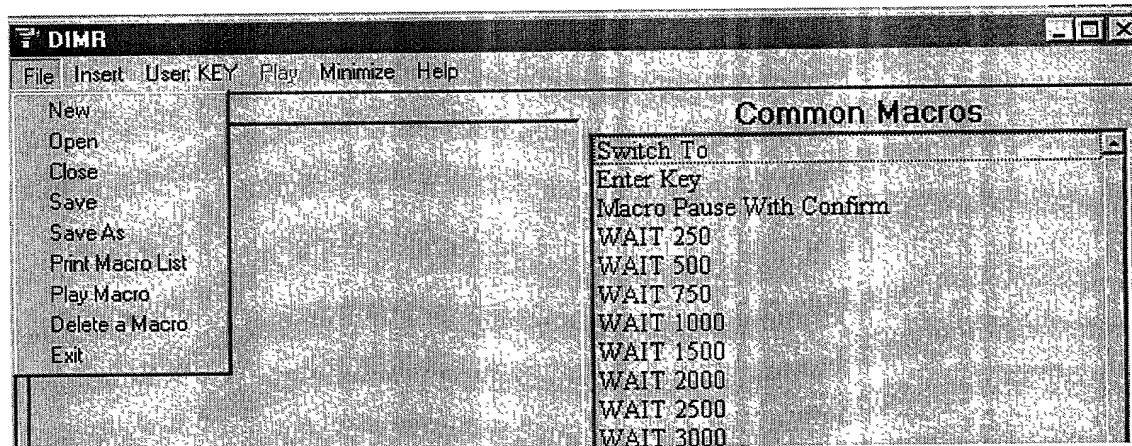
### **A real world example**

After only a few days one of the physicians at a military medical treatment facility had created over 120 different macro commands that accounted for more than 96% of all clinical orders and order types he issued into that facilities legacy clinical information system. His estimate was that this one feature allowed him to recapture over an hour per day in productive time to see more patients or spend more time with his current patient load. His calculations were based on the fact that he saw 20 patients a day, issued 3 orders per patient and the average time saving per order was between 45 seconds and one and one half minute.

The DIMR is composed of the following features and sub-features.

### **DIMR, Adding/Editing a Macro --- Overview**

The add/edit function of the DIMR is composed of these primary sections:



1. A title bar indicating in which active application the macro execution will begin in.
2. Menus as follows:
  - a) File allows you to;
    - Open a new macro,
    - Edit an existing macro,
    - Close and save macros using your specified name,
    - Print your macro list,
    - Play an existing macro,
    - Delete a macro, and
    - Exit the DIMR.
  - b) Insert allows you to insert into an open macro any of the following;
    - Common macros to do standard Windows application functions,
    - Any one of your saved macros. This creates an imbedded macro inside another macro,
    - Shared macros – This allows you to imbed any user's macro into one of yours,
    - Templates – If you are an M2K user you can have DIMR script macros automatically insert your templates during the execution of a script macro.

- c) User: is followed by the name of the logged in User.
- d) Play will play the open macro.
- e) Minimize allows you to specify that you want the DIMR to be minimized while playing macros.
- f) Help

3. Below the menus is the recording window on the left. This window is where your macro will be shown as it is recorded.
4. The List window is on the right. This is where the list of common macros, your macros, other user created macros, and/or your templates are displayed.

## Recording Scripts

### Starting a new Macro.

To start recording a new macro press File and then New. You will be presented with a list of all applications currently active on your task bar.

Selected Menu Name:	Selected Class Name:
DIMR	DIMR
DIMR	DIMR
WINWORD	
MARLIN_RECONFIG	
FULLSHOT99	
MARLIN	
DIMR	
WINWORD	
M2K	
MSMSGs	
OUTLOOK	

Highlight the application in which the macro will be started and press Start in. If your application is not on the list, start it so that it is on your task bar and then click Refresh List. It will now be on the list.

## **Use of Switch To:**

The common macro Switch To in the right hand window is used when a user wishes to switch applications during the playing of a macro. Pressing it will bring up the same form as when File, New is pressed. This allows a macro to alternately switch between multiple applications when it's executed.

## **Start Recording.**

When you are positioned at the starting point in the application for the command you wish to record, simply start recording the keystrokes --- or macros from the right side of the wizard. To test at any time in the recording process, choose File and then Play.

To enter other than standard keystrokes in the wizard, just click on the appropriate Insert choice on the menu. There are no limitations to the number of keystrokes or lines you can record in the wizard. Just remember to limit a single line in the wizard to a set of keystrokes or one item from the list.

## **The use of WAIT.**

Waits are system pauses you can use if any application is having difficulty keeping up with your torrid stream of keystrokes. When you play your command, if the application appears to be jumping over keystrokes without executing them you will have to place some Waits between your keystrokes. You do this by placing your cursor at the beginning of a line in the wizard and then, click on one of the waits in the list window. These range from 1/4 second to 5 seconds of pause before the next series of keystrokes are sent to the application. The Waits are listed in milliseconds.

## **The use of macro Pause With Confirm.**

This common macro is used whenever you are trying to record a script that encounters an area in which the next entry is not always the same. This macro will pause the running of a script and allow a user to enter their own keystrokes, reposition in an application, etc. and then continue with the script.

This may take a little practice, but after you get the hang of it you will be creating massive keystroke series and never have to key them again --- just play and the DIMR will do the rest.

**Saving your macro.** Once you are satisfied, simply choose file and save. You will be asked for a name, and you're ready to use it.

As well, if you are a voice user, a voice command will be built.

### **Editing an existing script.**

If you wish to edit a script that has been saved, press File and Open. You will be presented with a list of your existing macro scripts.

This form allows you to open a macro, Play a macro, delete macros that are no longer needed, and print a list of your macros.

### **Playing Your Recorded Script**

There are multiple methods you can use to play your macro scripts.

1. You can play from the DIMR while you are building or editing a script.
2. You can issue a voice command if you are voice activated.
3. You can login to the DIMR and choose to Play macros, or
4. You can press File and then Play. This will expose a list of your scripts as seen below. From this you can highlight a script and click Play on the menu bar, or you can double click your choice and it will be played.

### **Sharing Your Scripts With Others or Using Scripts Others Have Created**

This feature allows you to acquire scripts others have created and use them as your own without having to create them from scratch.

To acquire a script that someone else has created, simply choose Insert and Insert from Shared. You will be presented with a list of macros by user.

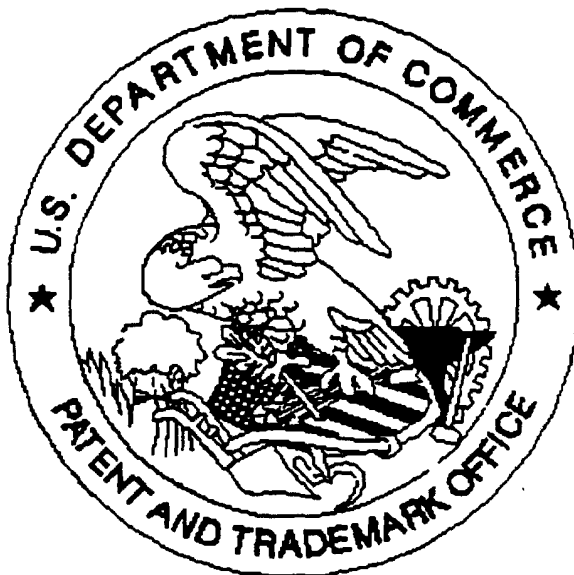
Choose the user and then choose the script in the right hand window, and then double click or choose Insert on the menu.

If you are inserting from shared without a script open in the add/edit form you will be given the entire script including its Start In application.

If you are inserting from shared with a new or old script already open in the add/edit form you will be asked if you wish to either Switch to the application the inserted macro starts in or to simply include the macro script lines without performing a Switch to.

You will now have a new script presented in your add/edit script window just as if you had created it line by line.

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